README.md

CSE 464 Project Part 1

GraphManager

Instructions to Run

- Download the `GraphManager.zip` file from this repository
- Import it in IntelliJ IDE
- From the menu bar, click on Run and then Run GraphManagerTest
- This should run all the tests for GraphManager

APIs

- `void parseGraph(String filePath)` - import a directed graph in a dot file
- `String toString()` - Graph information like number of nodes, edges and their directions
- `void outputGraph(String filePath)` - Write the graph information to a file
- `int nodeSize()` - Returns number of nodes in the graph
- `int edgeSize()` - Returns the number of edges in the graph
- `boolean containsNode(String label)` - Returns true if the graph contains the node and false otherwise
- `boolean containsEdge(String srcLabel, String dstLabel)` - Returns true if edge exists in graph and false otherwise
- `void addNode(String label)` - Adds a new node to the graph with the given label if it does not exist
- `boolean removeNode(String label)` - Returns false if node does not exist or returns true if node is removed
- `void addNodes(String[] labels)` - Add multiple nodes to the graph
- `boolean removeNodes(String[] labels)` - Returns true if all nodes are removed successfully otherwise returns false if even one node exists

- `boolean addEdge(String srcLabel, String dstLabel)` - Returns true if edge is added otherwise returns false if edge exists
- `boolean removeEdge(String srcLabel, String dstLabel)` - Returns true if edge is removed successfully otherwise returns false if edge does not exist in the graph
- `void outputDOTGraph(String filePath)` - Outputs the modified graph in DOT format to the specified file
- `void outputGraphics(String filePath)` - Output the modified graph to a PNG file (Graph Visualization)

Example Code

- Creating a new GraphManager object

```
GraphManager g = new GraphManager();
```

- Parsing the graph and printing information

```
g.parseGraph("src/test.dot");
System.out.println(g.toString());
g.outputGraph("src/graphinfo.txt");
```

- Adding and Removing nodes

```
g.addNode("e");
g.removeNode("e");
String[] nodesToAdd = {"e","f","g"};
g.addNodes(nodesToAdd);
String[] nodesToRemove = {"e","g"};
g.removeNodes(nodesToRemove);
```

- Adding and removing edges

```
g.addEdge("a","f");
g.removeEdge("a","b");
```

- Output graph as DOT and PNG

```
    g.outputDOTGraph("src/modified.dot");
    g.outputGraphics("src/modified.png");
```